

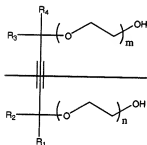
# Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

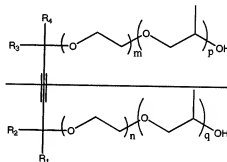
## Listing of Claims:

Claims 1 to 16. (Canceled)

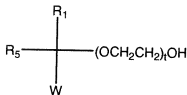
17. (Currently Amended) A process rinse solution to reduce at least one defect selected from pattern collapse and line width roughness on the surface of a substrate that has been patterned and developed, the solution comprising an aqueous solvent, a non-aqueous solvent, and at least one surfactant selected from the group of surfactants having the formula ~~(I), (II),~~ (III), (IVa), (IVb), (V), (VI), (VII), (VIII), ~~(IXa), (IXb),~~ (IXc), (Xa), ~~(Xb), (Xc),~~ or (Xd):



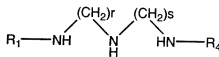
I



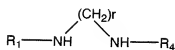
II



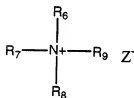
III



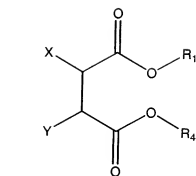
IVa



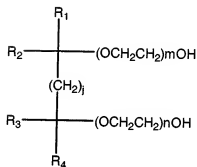
IVb



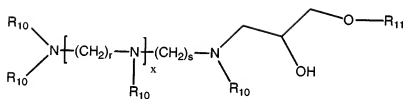
VI



V



VII



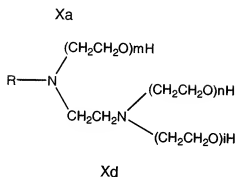
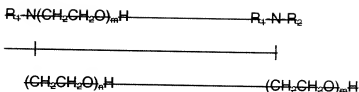
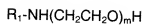
VIII



IXa

IXb

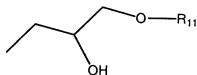
IXc



Xb

Xc

wherein R, R<sub>1</sub>, R<sub>4</sub>, and R<sub>12</sub> are each independently a straight, a branched, or a cyclic alkyl group having from 3 to 25 carbon atoms; R<sub>2</sub> and R<sub>3</sub> are each independently a hydrogen atom or a straight, a branched, or a cyclic alkyl group having from 1 to 5 carbon atoms; R<sub>5</sub> is a straight, a branched, or a cyclic alkyl group having from 1 to 10 carbon atoms; R<sub>6</sub> is a straight, a branched, or a cyclic alkyl group having from 4 to 16 carbon atoms; R<sub>7</sub>, R<sub>8</sub>, and R<sub>9</sub> are each independently a straight, a branched, or a cyclic alkyl group having from 1 to 6 carbon atoms; R<sub>10</sub> is a hydrogen atom or a group



represented by the formula

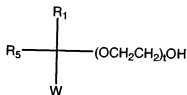
; R<sub>11</sub> is a straight, a

branched, or a cyclic alkyl group having from 4 to 22 carbon atoms; W is a hydrogen atom or an alkynyl group; X and Y are each independently a hydrogen atom or a hydroxyl group; Z is a halide atom, a hydroxyl group, an acetate group, or a carboxylate group; i, m, and n are each independently a number that ranges from 0 to

20; r and s are each independently 2 or 3; t is a number that ranges from 0 to 2; j is a number that ranges from 1 to 5; and x is a number that ranges from 1 to 6.

18. (Original) The process solution of claim 17 wherein the non-aqueous solvent is miscible in the aqueous solvent.

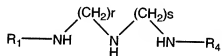
19. (Original) The process solution of claim 17 wherein the at least one surfactant is a surfactant having the following formula (III):



III

wherein  $R_1$  is a straight or a branched alkyl group having from 3 to 25 carbon atoms;  $R_5$  is a straight or a branched alkyl group having from 1 to 10 carbon atoms; W is a hydrogen atom or an alkynyl group; and t is a number that ranges from 0 to 2.

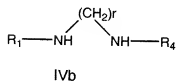
20. (Original) The process solution of claim 17 wherein the at least one surfactant is a surfactant having the following formula (IVa):



IVa

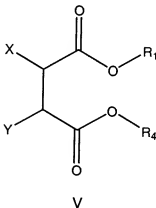
wherein  $R_1$  and  $R_4$  are each independently a straight or a branched alkyl group having from 3 to 25 carbon atoms and r and s are each independently 2 or 3.

21. (Original) The process solution of claim 17 wherein the at least one surfactant is a surfactant having the following formula (IVb):



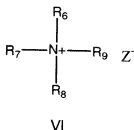
wherein R<sub>1</sub> and R<sub>4</sub> are each independently a straight or a branched alkyl group having from 3 to 25 carbon atoms and r is 2 or 3.

22. (Original) The process solution of claim 17 wherein the at least one surfactant is a surfactant having the following formula (V):



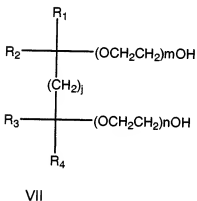
wherein R<sub>1</sub> and R<sub>4</sub> are each independently a straight or branched alkyl group having from 3 to 25 carbon atoms and X and Y are each independently a hydrogen atom or a hydroxyl group.

23. (Original) The process solution of claim 17 wherein the at least one surfactant is a surfactant having the following formula (VI):



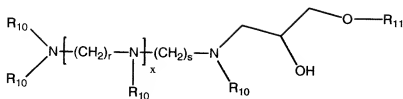
wherein  $R_6$  is a straight or a branched alkyl group having from 4 to 16 carbon atoms;  $R_7$ ,  $R_8$ , and  $R_9$  are each independently a straight or a branched alkyl group having from 1 to 6 carbon atoms; and  $Z$  is a halide atom, a hydroxyl group, an acetate group, or a carboxylate group.

24. (Original) The process solution of claim 17 wherein the at least one surfactant is a surfactant having the following formula (VII):



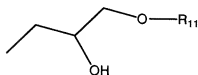
wherein  $R_1$  and  $R_4$  are each independently a straight or branched alkyl group having from 3 to 25 carbon atoms;  $R_2$  and  $R_3$  are each independently a hydrogen atom or an alkyl group having from 1 to 5 carbon atoms;  $m$  and  $n$  are each independently a number that ranges from 0 to 20; and  $j$  is a number that ranges from 1 to 5.

25. (Original) The process solution of claim 17 wherein the at least one surfactant is a surfactant having the following formula (VIII):



VIII

wherein  $R_{10}$  is a hydrogen atom or a group represented by the formula



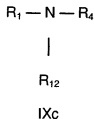
;  $R_{11}$  is independently a straight, branched, or cyclic alkyl

group having from 4 to 22 carbon atoms;  $r$  and  $s$  are each independently 2 or 3; and  $x$  is a number that ranges from 1 to 6.

26. (Canceled)

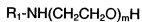
27. (Canceled)

28. (Original) The process solution of claim 17 wherein the at the at least one surfactant is a surfactant having the following formula (IXc):



wherein  $R_1$ ,  $R_4$ , and  $R_{12}$  are each independently a straight, a branched, or a cyclic alkyl group having from 3 to 25 carbon atoms.

29. (Original) The process solution of claim 17 wherein the at the at least one surfactant is a surfactant having the following formula (Xa):



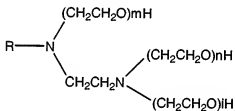
Xa

wherein  $R_1$  is a straight, a branched, or a cyclic alkyl group having from 3 to 25 carbon atoms; and  $m$  is a number that ranges from 0 to 20.

30. (Canceled)

31. (Canceled)

32. (Original) The process solution of claim 17 wherein the at the at least one surfactant is a surfactant having the following formula (Xd):



Xd

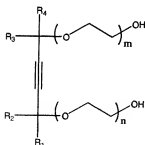
wherein  $R$  is independently a straight, a branched, or a cyclic alkyl group having from 3 to 25 carbon atoms; and  $i$ ,  $m$ , and  $n$  are each independently a number ranging from 0 to 20.

33. (Canceled)

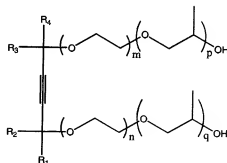
34. (Canceled)



35. (New) The process solution of claim 17 wherein the non-aqueous solvent is at least one selected from the group consisting of: ethylether, ethylene glycol monomethyl ether, 2-methoxyethyl ether, a nitrile, lactates, pyruvates, diols, tetrahydrofuran, acetone, 1,4-dioxane, 1,3-dioxolane, ethyl acetate, cyclohexanone, acetone, 1-methyl-2-pyrrolidionone, methyl ethyl ketone, dimethylformamide, dimethylacetamide, N-methyl pyrrolidone, ethylene carbonate, propylene carbonate, glycerol and derivatives, acetic acid anhydride, propionic acid and propionic acid anhydride, dimethyl sulfone, benzophenone, diphenyl sulfone, phenol, m-cresol, dimethyl sulfoxide, diphenyl ether, propylene glycol propyl ether, methanol, ethanol, 3-heptanol, 2-methyl-1-pentanol, 5-methyl-2-hexanol, 3-hexanol, 2-heptanol, 2-hexanol, 2,3-dimethyl-3-pentanol, propylene glycol methyl ether acetate, ethylene glycol, isopropyl alcohol, n-butyl ether, propylene glycol n-butyl ether, 1-butoxy-2-propanol, 2-methyl-3-pentanol, 2-methoxyethyl acetate, 2-butoxyethanol, 2-ethoxyethyl acetoacetate, 1-pentanol, and propylene glycol methyl ether.
36. (New) The process solution of claim 17 further comprising at least one surfactant selected from the group consisting of formula (I) and (II):



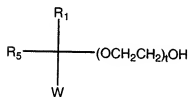
I



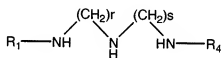
II

wherein p and q are each independently a number from 0 to 20.

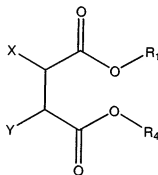
37. (New) A process rinse solution to reduce at least one defect selected from pattern collapse and line width roughness on the surface of a substrate that has been patterned and developed, the solution consisting of an aqueous solvent, a non-aqueous solvent, and at least one surfactant selected from the group of surfactants having the formula (III), (IVa), (IVb), (V), (VI), (VII), (VIII), (IXa), (IXb), (IXc), (Xa), (Xb), (Xc), or (Xd):



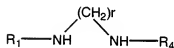
III



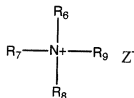
IVa



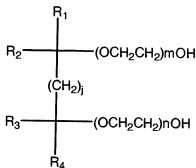
V



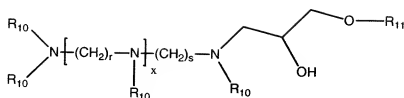
IVb



VI



VII



VIII



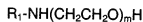
IXa



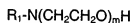
IXb



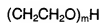
IXc



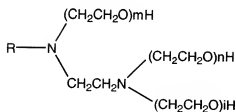
Xa



Xb



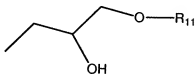
Xc



Xd

wherein R, R<sub>1</sub>, R<sub>4</sub>, and R<sub>12</sub> are each independently a straight, a branched, or a cyclic alkyl group having from 3 to 25 carbon atoms; R<sub>2</sub> and R<sub>3</sub> are each independently a

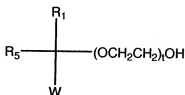
hydrogen atom or a straight, a branched, or a cyclic alkyl group having from 1 to 5 carbon atoms;  $R_5$  is a straight, a branched, or a cyclic alkyl group having from 1 to 10 carbon atoms;  $R_6$  is a straight, a branched, or a cyclic alkyl group having from 4 to 16 carbon atoms;  $R_7$ ,  $R_8$ , and  $R_9$  are each independently a straight, a branched, or a cyclic alkyl group having from 1 to 6 carbon atoms;  $R_{10}$  is a hydrogen atom or a group



represented by the formula ;  $R_{11}$  is a straight, a branched, or a cyclic alkyl group having from 4 to 22 carbon atoms; W is a hydrogen atom or an alkynyl group; X and Y are each independently a hydrogen atom or a hydroxyl group; Z is a halide atom, a hydroxyl group, an acetate group, or a carboxylate group; i, m, and n are each independently a number that ranges from 0 to 20; r and s are each independently 2 or 3; t is a number that ranges from 0 to 2; j is a number that ranges from 1 to 5; and x is a number that ranges from 1 to 6.

38. (New) The process solution of claim 37 wherein the non-aqueous solvent is miscible in the aqueous solvent.

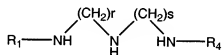
39. (New) The process solution of claim 37 wherein the at least one surfactant is a surfactant having the following formula (III):



III

wherein  $R_1$  is a straight or a branched alkyl group having from 3 to 25 carbon atoms;  $R_5$  is a straight or a branched alkyl group having from 1 to 10 carbon atoms; W is a hydrogen atom or an alkynyl group; and t is a number that ranges from 0 to 2.

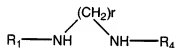
40. (New) The process solution of claim 37 wherein the at least one surfactant is a surfactant having the following formula (IVa):



IVa

wherein  $R_1$  and  $R_4$  are each independently a straight or a branched alkyl group having from 3 to 25 carbon atoms and r and s are each independently 2 or 3.

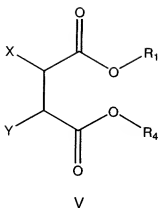
41. (New) The process solution of claim 37 wherein the at least one surfactant is a surfactant having the following formula (IVb):



IVb

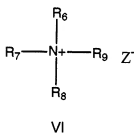
wherein  $R_1$  and  $R_4$  are each independently a straight or a branched alkyl group having from 3 to 25 carbon atoms and r is 2 or 3.

42. (New) The process solution of claim 37 wherein the at least one surfactant is a surfactant having the following formula (V):



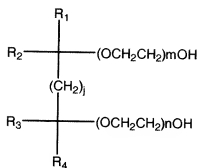
wherein  $R_1$  and  $R_4$  are each independently a straight or branched alkyl group having from 3 to 25 carbon atoms and X and Y are each independently a hydrogen atom or a hydroxyl group.

43. (New) The process solution of claim 37 wherein the at least one surfactant is a surfactant having the following formula (VI):



wherein  $R_6$  is a straight or a branched alkyl group having from 4 to 16 carbon atoms;  $R_7$ ,  $R_8$ , and  $R_9$  are each independently a straight or a branched alkyl group having from 1 to 6 carbon atoms; and Z is a halide atom, a hydroxyl group, an acetate group, or a carboxylate group.

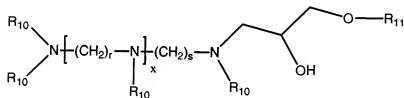
44. (New) The process solution of claim 37 wherein the at least one surfactant is a surfactant having the following formula (VII):



VII

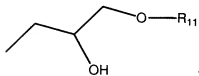
wherein  $R_1$  and  $R_4$  are each independently a straight or branched alkyl group having from 3 to 25 carbon atoms;  $R_2$  and  $R_3$  are each independently a hydrogen atom or an alkyl group having from 1 to 5 carbon atoms;  $m$  and  $n$  are each independently a number that ranges from 0 to 20; and  $j$  is a number that ranges from 1 to 5.

45. (New) The process solution of claim 37 wherein the at least one surfactant is a surfactant having the following formula (VIII):



VIII

wherein  $R_{10}$  is a hydrogen atom or a group represented by the formula



;  $R_{11}$  is independently a straight, branched, or cyclic alkyl group having from 4 to 22 carbon atoms;  $r$  and  $s$  are each independently 2 or 3; and  $x$  is a number that ranges from 1 to 6.

46. (New) The process solution of claim 37 wherein the at the at least one surfactant is a surfactant having the following formula (IXa):



IXa

wherein R<sub>1</sub> is a straight, a branched, or a cyclic alkyl group having from 3 to 25 carbon atoms.

47. (New) The process solution of claim 37 wherein the at the at least one surfactant is a surfactant having the following formula (IXb):



IXb

wherein R<sub>1</sub> and R<sub>4</sub> are each independently a straight, a branched, or a cyclic alkyl group having from 3 to 25 carbon atoms.

48. (New) The process solution of claim 37 wherein the at the at least one surfactant is a surfactant having the following formula (IXc):



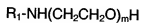
R<sub>12</sub>

IXc

wherein R<sub>1</sub>, R<sub>4</sub>, and R<sub>12</sub> are each independently a straight, a branched, or a cyclic alkyl group having from 3 to 25 carbon atoms.



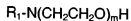
49. (New) The process solution of claim 37 wherein the at the at least one surfactant is a surfactant having the following formula (Xa):



Xa

wherein  $R_1$  is a straight, a branched, or a cyclic alkyl group having from 3 to 25 carbon atoms; and  $m$  is a number that ranges from 0 to 20.

50. (New) The process solution of claim 37 wherein the at the at least one surfactant is a surfactant having the following formula (Xb):



|



Xb

wherein  $R_1$  and  $R_2$  are each independently a straight, a branched, or a cyclic alkyl group having from 3 to 25 carbon atoms; and  $m$  and  $n$  are each independently a number that ranges from 0 to 20.

51. (New) The process solution of claim 37 wherein the at the at least one surfactant is a surfactant having the following formula (Xc):



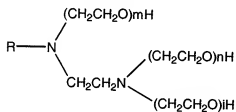
|



Xc

wherein  $R_1$  and  $R_2$  are each independently a straight, a branched, or a cyclic alkyl group having from 3 to 25 carbon atoms; and  $m$  is a number that ranges from 0 to 20.

52. (New) The process solution of claim 37 wherein the at the at least one surfactant is a surfactant having the following formula (Xd):



Xd

wherein  $R$  is independently a straight, a branched, or a cyclic alkyl group having from 3 to 25 carbon atoms; and  $i$ ,  $m$ , and  $n$  are each independently a number ranging from 0 to 20.

53. (New) The process solution of claim 37 wherein the non-aqueous solvent is at least one selected from the group consisting of: ethylether, ethylene glycol monomethyl ether, 2-methoxyethyl ether, a nitrile, lactates, pyruvates, diols, tetrahydrofuran, acetone, 1,4-dioxane, 1,3-dioxolane, ethyl acetate, cyclohexanone, acetone, 1-methyl-2-pyrrolidone, methyl ethyl ketone, dimethylformamide, dimethylacetamide, N-methyl pyrrolidone, ethylene carbonate, propylene carbonate, glycerol and derivatives, acetic acid anhydride, propionic acid and propionic acid anhydride, dimethyl sulfone, benzophenone, diphenyl sulfone, phenol, m-cresol, dimethyl sulfoxide, diphenyl ether, propylene glycol propyl ether, methanol, ethanol, 3-heptanol, 2-methyl-1-pentanol, 5-methyl-2-hexanol, 3-hexanol, 2-heptanol, 2-hexanol, 2,3-dimethyl-3-pentanol, propylene glycol methyl ether acetate, ethylene glycol, isopropyl alcohol, n-butyl ether, propylene glycol n-butyl ether, 1-butoxy-2-propanol, 2-methyl-3-pentanol, 2-methoxyethyl acetate,

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2-butoxyethanol, 2-ethoxyethyl acetoacetate, 1-pentanol, and propylene glycol methyl ether.